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6 A PILOT STUDY ON THE INCIDENCE
OF SEA-SICKNESS IN RN PERSONNEL
ON TWO SHIPS

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S U M M A R Y

This report presents the main findings of a pilot study investigating sea-sickness amongst the crews of two RN ships undergoing sea-keeping trials during October, 1977. The survey consisted of two parts: the first part was aimed at obtaining an 'historical' picture of sea-sickness incidence in each seaman and his personal treatment of the condition; and the second part assessed the daily occurrence of sea-sickness, the sick-bay attendance and treatments issued by sick-bay staff during the trials period.

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INTRODUCTION

One of INM's contributions to a research programme being co-ordinated by RNPRC into the treatment of motion sickness and the effects on work has been a pilot study to investigate the incidence of sea-sickness in RN personnel on 2 ships.

The ships, HMS GURKHA and HMS HERMIONE, were undergoing sea-keeping trials for the 5 days, 10-14 October 1977. The study was conducted in 2 parts using self-administered questionnaires. Part 1 was aimed at obtaining an 'historical' picture of the incidence of sea-sickness in each member of the ship's company and his personal treatment of the condition. Part 2 was to evaluate the daily occurrence of sea-sickness during the trial period.

RN personnel have traditionally played down motion sickness, considering it to be an occupational hazard which is to be endured. For this reason, estimates of the incidence of sea-sickness based on questionnaire replies may not be too reliable and perhaps tend to understate the real situation.

METHODOLOGY

Before the 2 ships left harbour for the trials, a senior medical officer discussed the distribution and collection of the questionnaires with the sick-bay staff. The 'historical' motion sickness questionnaires were issued on the first day at sea and returned within 24 hours. The follow-up questionnaires were circulated towards the end of the trials and returned on the last day at sea.

During the trials period, sick-bay staff maintained a daily log of: (1) attendances for sea-sickness treatment, (2) drugs given for treatment, (3) sea and weather conditions - taken from the ship's log.

RESULTS

Completed questionnaires to part 1 of the survey were received by the sick-bay staff from 91% of the crew of HMS GURKHA and 99% of HMS HERMIONE. For part 2 of the survey the response rates were only 84% from HMS GURKHA and 99% from HMS HERMIONE. Crew members normally completed their forms in their messes. The presence of mess-mates may well have prevented or inhibited some of the younger men from recording an honest assessment of the frequency, severity and effects of their sea-sickness. The figures given below should be considered with caution and most likely understate the occurrence of sea-sickness.

1. 'Historical' picture of the incidence of sea-sickness

Overall, approximately 73% of the crew of HMS GURKHA and 67% of HMS HERMIONE said that they had suffered from sea-sickness during their service careers. 56% and 42% respectively had been sea-sick at least once during the past 12 months.

Table 1 provides a view of the naval experience of the crews in terms of service years (not solely time at sea). Approximately 50% of the sailors had been in the Navy for under 5 years and about 5% for less than one year. The percentages of RN servicemen who said

they had been sea-sick at least once during their service careers, or during the past 12 months, are shown in Table 2. It would appear that sea-sickness figures for the 'past 12 months' generally lessen as service time increases - perhaps indicating that the sailors become conditioned with time.

The item, 'normal place of work', on the questionnaire has been classified into 5 locations. On this basis, fewer than 10% stated their working place as 'anywhere' or 'no specified place'. The variation in percentages of sea-sickness sufferers by working location is not great (Table 3). About 5% of both crews indicated that they could not work during bouts of sea-sickness, whilst a further 50% had some difficulty in working on these occasions.

Both crews provided similar findings on the usual occurrence of motion sickness in relation to days at sea. About 50% of the crews said that sickness usually occurred on the 1st day at sea, 15% on the 2nd day, 10% during the remaining part of the 1st week, and 7% after the first week.

However, the relationship between motion sickness and sea conditions is pronounced, regardless of length of time at sea, - the incidence of sea-sickness increasing with worsening sea conditions (Table 4). Few sailors were sick in calm waters, whereas in rough seas 65-70% suffered some degree of sickness.

The occurrence of sickness varied with the motion of the ship. Approximately 42% of all the sailors (or 60% of sea-sickness sufferers) indicated a positive association of their sickness with the pitching motion of the ship. They did not link sickness with rolling, yawing and heaving motions to such an extent (Table 5).

Although 56% of the crew of HMS GURKHA and 42% of the crew of HMS HERMIONE said they had suffered from sea-sickness during the past 12 months, only 8% and 14% respectively declared that they normally took medicine to prevent or treat sea-sickness. Many of the sailors could not indicate the type of medicine given or used. Hyoscine was the most frequently quoted drug, with avomine and stemetil also being mentioned by a few. Those sailors not normally taking drugs to treat their sickness resorted to a variety of measures - extra rest or sleep; changes in food and drink consumption - especially avoiding greasy or rich food and beer during periods of sickness; going on deck for fresh air being the 3 main remedies mentioned.

2. Motion sickness during the 'trial'

During the 5 days, 10-14 October 1977, HMS GURKHA and HMS HERMIONE undertook sea-keeping trials in heavy seas, carrying out specific manoeuvres in various directions and at different speeds. The worst sea and wind conditions experienced on the 5 days are summarised in Table 6. On most days the sea state exceeded 'rough' (wave heights up to 13 feet) and on one day GURKHA recorded 'phenomenal' seas (waves over 45 feet).

The daily incidence of crew sea-sickness (Tables 7 and 8) reflects the combination of ship manoeuvring patterns, rough seas and weather states, and deteriorating conditions of the environment on board. During the 5 days, 38% of the crew of HMS GURKHA and 47% of the crew of HMS HERMIONE were sea-sick on one or more occasions, with 2-3% suffering sea-sickness every day. 10% of the sailors on HMS GURKHA and 6% on HMS HERMIONE stated they had to stop work during times of sea-sickness.

3. Sick-bay treatment during 'trials'

Sick-bay staff provided a statement on the drugs available to sea-sickness sufferers and the dose normally issued at one time. Although hyoscine tablets were issued to the vast majority of sea-sickness sufferers who sought treatment, avomine and stemetil were given in a few cases (Table 7 and 8).

CONCLUSIONS

From this survey it would appear that a high proportion of sailors (as many as 70%) are sea-sick at some time during their naval careers - the incidence of bouts of sickness possibly becoming less frequent as the length of their service increases. However, sea-sickness amongst 50% of the two crews during the last 12 months can be considered a high rate of incidence in such a short time. The crews are particularly affected by sea conditions, regardless of length of service or normal working place on the ship.

During inclement weather and sea conditions the efficiency of the crews could have been greatly reduced, since as many as 50% of sailors had some trouble in carrying on with their work.

It would appear that many cases of sea-sickness are 'endured' rather than medically treated. Treatment was usually by hyoscine tablets although avomine and stemetil were also prescribed. Self-treatment was more common, usually in the form of extra rest, fresh air and a restricted diet.

The pilot study has therefore shown a widespread occurrence of sea-sickness amongst the crews of these two ships, especially in poor weather and sea conditions. Further investigation is necessary to determine what can be done to reduce the incidence of this debilitating condition and increase the efficiency of the crews on RN ships.

ACKNOWLEDGEMENTS

This survey would not have been possible without the full co-operation and support of the Commanding Officers of HMS GURKHA and HMS HERMIONE.

Table 1. RN service time : frequency distribution

| Ship | Service time (years) | | | | | | Base (= 100%) |
|--------------|----------------------|-----|-----|-------|-------|------------|-------------------|
| | Under 1 | 1-4 | 5-9 | 10-14 | 15-19 | 20 or more | |
| GURKHA % | 6 | 48 | 18 | 12 | 11 | 4 | 221 |
| HERMIONE % | 5 | 44 | 16 | 17 | 12 | 6 | 244 |

Table 2. Percentage of servicemen who have suffered motion sickness
(a) during career, (b) past year, related to service time

| Ship | | Overall | Service time (years) | | | | | |
|----------|-----|---------|----------------------|-----|-----|-------|-------|------------|
| | | | Under 1 | 1-4 | 5-9 | 10-14 | 15-19 | 20 or more |
| GURKHA | (a) | 73 | 79 | 78 | 56 | 70 | 75 | 78 |
| | (b) | 56 | 79 | 62 | 44 | 48 | 42 | 67 |
| HERMIONE | (a) | 67 | 67 | 62 | 64 | 78 | 76 | 64 |
| | (b) | 42 | 67 | 52 | 28 | 39 | 24 | 50 |

Table 3. Percentage of servicemen who have suffered sickness during
the past year by 'normal place of work'

| Ship | Overall | Normal place of work | | | | | |
|----------|---------|----------------------|------------------|-----------------|--------|---------------|----------|
| | | Bridge/ Offices | Control Rooms | Engine Rooms | Galley | Upper Deck | Anywhere |
| GURKHA | 56 | 58 | 54 | 59 | 63 | 59 | 31 |
| HERMIONE | 42 | 37 | 39 | 34 | 44 | 57 | 50 |

Table 4. RN servicemen by frequency of sea-sickness in various sea conditions

| Ship | Sea State | Frequency of sea-sickness | | | | Base (= 100%) |
|----------|-----------|---------------------------|-------|--------------|------------|-------------------|
| | | Always | Often | Occasionally | Not at all | |
| GURKHA | Calm | % 0 | 0 | 6 | 94 | 222 |
| | Moderate | % 0 | 3 | 27 | 70 | 222 |
| | Rough | % 4 | 18 | 47 | 31 | 222 |
| HERMIONE | Calm | % 0 | 0 | 2 | 98 | 245 |
| | Moderate | % 1 | 2 | 23 | 74 | 245 |
| | Rough | % 9 | 15 | 41 | 35 | 245 |

Table 5. Percentage of servicemen associating sea-sickness with particular ship motion

| Ship motion | GURKHA | HERMIONE |
|-------------|---------|----------|
| Rolling | 29 (40) | 32 (48) |
| Pitching | 41 (57) | 42 (63) |
| Yawing | 25 (34) | 28 (41) |
| Heaving | 32 (43) | 34 (51) |

Notes: First figures is % of crew.
 Second figure in brackets is % of sea-sickness sufferers.

Table 6. Trials period : worst sea and wind conditions

| | October | | | | |
|----------------------------|---------|----|----|----|----|
| | 10 | 11 | 12 | 13 | 14 |
| GURKHA : sea state (max) | 7 | 9 | 8 | 4 | 4 |
| wind velocity (max) | 7 | 8 | 7 | 6 | 5 |
| HERMIONE : sea state (max) | 5 | 7 | 7 | 5 | * |
| wind velocity (max) | 7 | 7 | 8 | 4 | * |

Notes: * In harbour by 0800
 Beaufort scale for wind velocity
 Sea state as used in RN ship's log.

Table 7. Percentage of servicemen on HMS GURKHA
 (a) feeling sea-sick, (b) seeking treatment

| | October | | | | |
|---|---------|----|----|----|----|
| | 10 | 11 | 12 | 13 | 14 |
| Men feeling sea-sick % | 19 | 26 | 16 | 9 | 6 |
| Men reporting directly to sick-bay for sea-sickness treatment % | 5 | 1 | 0 | 0 | 0 |
| Men given medicine by sick-bay staff at the sick-bay and elsewhere % | 5 | 1 | 0 | 0 | 0 |
| Men given hyoscine tablets % | 5 | 1 | 0 | 0 | 0 |

Table 8.

Percentage of servicemen on HMS HERMIONE
(a) feeling sea-sick, (b) seeking treatment

| | | October | | | | |
|--|---|---------|------------|------------|----|----|
| | | 10 | 11 | 12 | 13 | 14 |
| Men feeling sea-sick | % | 17 | 37 | 29 | 9 | 3 |
| Men reporting directly to sick-bay for sea-sickness treatment | % | 7 | 12 | 6 | 0 | 0 |
| Men given medicine by sick-bay staff at the sick-bay and elsewhere | % | 15 | 21 | 7 | 0 | 0 |
| Men given hyoscine tablets | % | 15 | 20 | 6 | 0 | 0 |
| Men given avomine | % | 0 | under 1 | under 1 | 0 | 0 |
| Men given stemetil | % | 1 | 0 | 0 | 0 | 0 |